WE CLAIM AS OUR INVENTION:

1. A feedback compensator for use with an acoustic amplifier to compensate feedback arising upon amplification of an input signal in an input signal path, in a feedback path between an amplified output signal and said input signal, said feedback compensator comprising:

an adaptive feedback compensation filter that forms a feedback compensation path mimicking said feedback path, and which generates a feedback compensation signal;

an adaptation unit connected to said adaptive feedback compensation filter for adapting said adaptive feedback compensation filter to form said feedback compensation path;

a frequency-limiting filter connected to limit a frequency range of said frequency compensation path;

a division of said input signal path into a first branch and a second branch;

a first filter in said first branch and a second filter in said second branch;

a first node in said first branch following said first filter, to which said feedback compensation signal is supplied, at which said feedback compensation signal is subtracted from an output of said first filter;

a second node in said first branch following said first node, from which an error signal is supplied to said adaptation unit; and

a third node connected to said second node and to an output of said second filter to add said error signal and said output of said second filter to produce a signal adapted for supply to an input of the acoustic amplifier.

2. A feedback compensator as claimed in claim 1 wherein said acoustic amplifier has an output and said adaptive feedback compensation filter has an input, and wherein said frequency limiting filter is adapted to be connected to said output of said acoustic amplifier and is connected to said adaptive feedback compensation filter.

3. A feedback compensator as claimed in claim 1 wherein said first filter and said frequency limiting filter have substantially identical filter functions.

4. A hearing aid device comprising:

an acoustoelectric input transducer that generates an electrical input signal;

an electroacoustic output transducer;

an amplifier connected between said acoustoelectric transducer and said electroacoustic transducer that produces an amplified output signal from said input signal, said amplifier having a feedback path associated therewith from said amplified output signal to said input signal;

an adaptive feedback compensation filter that forms a feedback compensation path mimicking said feedback path, and which generates a feedback compensation signal;

an adaptation unit connected to said adaptive feedback compensation filter for adapting said adaptive feedback compensation filter to form said feedback compensation path;

a frequency-limiting filter connected to limit a frequency range of said frequency compensation path;

a division of said input signal path into a first branch and a second branch;

a first filter in said first branch and a second filter in said second branch;

a first node in said first branch following said first filter, to which said feedback compensation signal is supplied, at which said feedback compensation signal is subtracted from an output of said first filter;

a second node in said first branch following said first node, from which an error signal is supplied to said adaptation unit; and

a third node connected to said second node and to an output of said second filter to add said error signal and said output of said second filter to produce a signal adapted for supply to an input of said amplifier.

5. A hearing aid device as claimed in claim 4 wherein said amplifier is a multi-channel amplifier that amplifies said input signal respectively differently in different frequency ranges.

6. A method for compensating feedback in an acoustic system wherein an input signal, in an input signal path, is amplified to produce an amplified output signal and wherein a feedback path exists between the amplified output signal and the input signal, comprising the steps of:

in an electronic adaptive feedback compensation filter, electronically mimicking said feedback path to form a feedback compensation path;

adapting said adaptive feedback compensation filter to form said feedback compensation path;

limiting a frequency range of said feedback compensation path;

splitting said input signal into a feedback-susceptible signal portion and a feedback-free signal portion;

combining said feedback-susceptible signal portion with a feedback compensation signal generated by said adaptive feedback compensation filter to form said feedback-free signal portion;

using said feedback-free signal portion as an error signal to adapt said adaptive feedback compensation filter; and

combining said feedback-susceptible signal portion with said feedback-free signal portion to form a feedback-compensated signal, and subsequently amplifying said feedback-compensated signal to produce said amplified output signal.

7. A method as claimed in claim 6 wherein the step of limiting a frequency range of said feedback compensation path comprises supplying said amplified output signal to said adaptive feedback compensation filter via a frequency-limiting filter.

8. A method as claimed in claim 6 comprising limiting said feedback-susceptible signal portion and feedback compensation path to a substantially identical frequency range.

9. A method as claimed in claim 6 comprising amplifying said input signal with respectively different amplification factors in different frequency ranges.

10. A method for operating a hearing aid comprising the steps of:

amplifying an input signal to produce an amplified output signal, said amplifying having a feedback path associated therewith from the amplified output signal to the input signal;

in an electronic adaptive feedback compensation filter, electronically mimicking said feedback path to form a feedback compensation path;

adapting said adaptive feedback compensation filter to form said feedback compensation path;

limiting a frequency range of said feedback compensation path;

splitting said input signal into a feedback-susceptible signal portion and a feedback-free signal portion;

combining said feedback-susceptible signal portion with a feedback compensation signal generated by said adaptive feedback compensation filter to form said feedback-free signal portion;

using said feedback-free signal portion as an error signal to adapt said adaptive feedback compensation filter; and

combining said feedback-susceptible signal portion with said feedback-free signal portion to form a feedback-compensated signal, and subsequently amplifying said feedback-compensated signal to produce said amplified output signal.